

REMARKS

Status of Claims

1. Claims 1-8 were originally presented in this application. Claims 9 and 10 were added in an RCE-accompanying amendment dated August 16, 2006. Claims 1 and 9 were amended in Applicant's reply dated March 8, 2007. For the Office's convenience, in this paper the claims have been re-presented in clean form; no claims have been added, canceled, or amended. Claims 1-10 thus remain pending before the Examiner.

Claim Rejections – 35 U.S.C. § 103

2. Claims 1-10 stand rejected under 35 USC 103(a) as being unpatentable over *Satoh et al.* (U.S. Pat. No. 6,761,771) in view of *Aruga et al.* (U.S. Pat. No. 5,688,331) or *Soma et al.* (U.S. Pat. No. 5,231,690), and *Storbeck* (U.S. Pat. App. Pub. No. 2002/0023590). In particular, the Office states:

With respect to the recited shaft being disposed to warp the substrate in the controlled manner so as to decrease the concavity of the wafer-carrying face, *Satoh* having the pipe-shaped shaft, as modified by *Aruga*, would have inherently performed the recited controlled manner as the substrate goes through the heating process for heating the wafers, and the recited curvature of claim 10 when the substrate is heated to 500°C would also have been inherent functions or characteristics as the prior art having the substantially identical structure as that of the claimed invention (see MPEP 2112.01).

3. Applicant respectfully traverses this rejection. Independent claim 1, as amended in the March 8, 2007 reply and re-presented in this paper, recites: "the pipe-shaped shaft is disposed to warp the substrate in a controlled manner ***such that said concavity of the wafer-carrying face decreases upon heating of the substrate.***" (Emphasis added.) Independent claim 9 is more specific and defines the decrease in concavity of the wafer-carrying face as follows:

the susceptor is formed so that the wafer-carrying face has a curvature of -0.001 to 0.7 mm per 300 mm length when the susceptor is at rest, and so that when operated to heat said substrate to 500°C, the susceptor flexes such that the wafer-carrying face assumes a curvature of from -0.2 mm to +0.45 mm per 300 mm length.

4. Claims 1 and 9, in reciting a concavity that decreases with heating of the substrate, are in clear contrast to the prior art as represented for example by *Storbeck*. In Paragraph [0003], *Storbeck* states:

Especially when the wafer is warped concavely, ***the warpage will be increased when the wafer is placed on a hot chuck in a process chamber***. This is due to the fact that the center of the wafer is heated first, thereby expanding the center portion of the semiconductor material ***so that the concave warpage is amplified***.

(Emphasis added.) By teaching an increasing concavity with heating, *Storbeck* clearly teaches away from the invention as recited in independent claims 1 and 9. Applicant respectfully submits, therefore, that the present rejection of claims 1 and 9 should be withdrawn.

5. Applicant courteously urges that *Storbeck* further teaches away from independent claim 9. Claim 9, as quoted in Paragraph 3 of this paper, recites a structure in which the wafer-carrying face of the susceptor upon being heated to 500°C can become ***convex*** (i.e., having a curvature up to 0.45 mm per 300 mm length). *Storbeck*, on the other hand, teaches that the wafer-carrying surface must be ***concave***. For example, Paragraph [0013] of *Storbeck* states:

When touching the hot surface of the chuck with its circumference, the outer portion of the wafer is heated first, so that it extends outwardly and thereby flattens the wafer. Thereby ***the chuck must be sufficiently concave*** in form so that each wafer irrespective of its bowing or warpage always touches the chuck at its perimeter first.

(Emphasis added.) Applicant respectfully submits, for the foregoing reason as well, that the present rejection of claim 9 should be withdrawn.

6. Since it is believed that independent claims 1 and 9 are allowable over the prior art of record, it follows that dependent claims 2-8 and 10 should also be allowable.

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Reply dated September 17, 2007
Re: Final Office Action of May 15, 2007

Accordingly, Applicants courteously urge that this application is in condition for allowance. Reconsideration and, as urged in the foregoing arguments, withdrawal of the rejections is earnestly requested. Favorable action by the Examiner at an early date is solicited.

Respectfully submitted,

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